POLICY RESEARCH WORKING PAPER 2683

Financial Policies and the Prevention of Financial Crises in Emerging Market Economies

Frederic S. Mishkin

In recent years we have seen a growing number of banking and financial crises in emerging market countries, with great costs to their economies. But we now have a much better understanding of why these crises occur and a better idea how they can be prevented.

The World Bank
Financial Sector Strategy and Policy Department
October 2001

POLICY RESEARCH WORKING PAPER 2683

Summary findings

Mishkin defines a financial crisis as a disruption in financial markets in which adverse selection and moral hazard problems become much worse, so that financial markets are unable to efficiently channel funds to those who have the most productive investment opportunities. As financial markets become unable to function efficiently, economic activity sharply contracts. Factors that promote financial crises include, mainly, a deterioration in financial sector balance sheets, increases in interest rates and in uncertainty, and deterioration in nonfinancial balance sheets because of changes in asset prices.

Financial policies in 12 areas could help make financial crises less likely in emerging market economies, says Mishkin. He discusses:

- Prudential supervision.
- Accounting and disclosure requirements.
- Legal and judicial systems.
- Market-based discipline.
- Entry of foreign banks.
- Capital controls.
- Reduction of the role of state-owned financial institutions.
- Restrictions on foreign-denominated debt.
- The elimination of too-big-to-fail practices in the corporate sector.
- The proper sequencing of financial liberalization.
- Monetary policy and price stability.
- Exchange rate regimes and foreign exchange reserves.

If the political will to adopt sound policies in these areas grows in emerging market economies, their financial systems should become healthier, with substantial gains both from greater economic growth and smaller economic fluctuations.

This paper—a product of the Financial Sector Strategy and Policy Department—was prepared for the NBER conference, "Economic and Financial Crises in Emerging Market Economies," Woodstock, Vermont, October 19–21, 2001. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Rose Vo, room MC9-624, telephone 202-473-3722, fax 202-522-2031, email address hvo1@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at fsm3@columbia.edu. October 2001. (41 pages)

FINANCIAL POLICIES AND THE PREVENTION OF FINANCIAL CRISES IN EMERGING MARKET ECONOMIES

by

Frederic S. Mishkin

Graduate School of Business, Columbia University
and
National Bureau of Economic Research

Uris Hall 619
Columbia University
New York, New York 10027
Phone: 212-854-3488, Fax: 212-316-9219
E-mail: fsm3@columbia.edu

Prepared for the NBER conference, "Economic and Financial Crises in Emerging Market Countries," Woodstock, Vermont, October 19-21, 2000. Any views expressed in this paper are those of the author only and not those of Columbia University, the National Bureau of Economic Research, or the World Bank.

1.
Introduction

In recent years, financial crises have been a common occurrence in emerging market (and transition) countries with devastating consequences for their economies. For example, the financial crises that struck Mexico in 1994 and the East Asian countries in 1997 led to a fall in the growth rate of GDP on the order of ten percentage points. The financial crises in Russia in 1998 and Ecuador in 1999 have had similar negative effects on real output. Not only did these crises lead to sharp increases in poverty, but to political instability as well.

Given the harmful effects and increased frequency of financial crises in emerging market countries in recent years, a issue that is now high on the agenda of policymakers throughout the world is the prevention of these crises. Specifically, what financial policies can help make crises less likely?

This paper examines this question by first developing a framework for understanding what a financial crisis is in emerging market countries and the dynamic process through which these crises occur. It then uses this framework to examine what particular financial policies may help to prevent financial crises.

2.
What is a Financial Crisis?

A financial system performs the essential function of channeling funds to those individuals or firms that have productive investment opportunities. To do this well, participants in financial markets must be able to make accurate judgements about which investment opportunities are more or less creditworthy. Thus, a financial system must confront problems of asymmetric information, in which one party to a financial contract has much less accurate information than the other party. For example, borrowers who take out loans usually have better information about the potential returns and risk associated with the investment projects they plan to undertake than lenders do. Asymmetric information leads to two basic problems in the financial system (and elsewhere): adverse selection and moral hazard.

Adverse selection occurs before the financial transaction takes place, when potential bad credit risks are the ones who most actively seek out a loan. For example, those who want to take

on big risks are likely to be the most eager to take out a loan, even at a high rate of interest, because they are less concerned with paying the loan back. Thus, the lender must be concerned that the parties who are the most likely to produce an undesirable or adverse outcome are most likely to be selected as borrowers. Lenders may thus steer away from making loans at high interest rates, because they know that they are not fully informed about the quality of borrowers, and they fear that someone willing to borrow at a high interest rate is more likely to be a low-quality borrower who is less likely to repay the loan. Lenders will try to tackle the problem of asymmetric information by screening out good from bad credit risks. But this process is inevitably imperfect, and fear of adverse selection will lead lenders to reduce the quantity of loans they might otherwise make.

Moral hazard occurs after the transaction takes place. It occurs because a borrower has incentives to invest in projects with high risk in which the borrower does well if the project succeeds, but the lender bears most of the loss if the project fails. A borrower also has incentives to misallocate funds for personal use, to shirk and not work very hard, and to undertake investment in unprofitable projects that serve only to increase personal power or stature. Thus, a lender subjected to the hazard that the borrower has incentives to engage in activities that are undesirable from the lender's point of view: that is, activities that make it less likely that the loan will be paid back. Lenders do often impose restrictions (restrictive covenants) on borrowers so that borrowers do not engage in behavior that makes it less likely that they can pay back the loan. However, such restrictions are costly to enforce and monitor, and inevitably somewhat limited in their reach. The potential conflict of interest between the borrower and lender stemming from moral hazard again implies that many lenders will lend less than they otherwise would, so that lending and investment will be at suboptimal levels.

The asymmetric information problems described above provides a definition of what a financial crisis is:

> **A financial crisis is a disruption to financial markets in which adverse selection and moral hazard problems become much worse, so that financial markets are unable to efficiently channel funds to those who have the most productive investment opportunities.**

A financial crisis thus results in the inability of financial markets to function efficiently, which leads to a sharp contraction in economic activity.

3.
Factors Promoting Financial Crises

To flesh out how a financial crisis comes about and causes a decline in economic activity, we need to examine the factors that promote financial crises and then go on to look at how these factors interact dynamically to produce financial crises.

There are four types of factors that can lead to increases in asymmetric information problems and thus to a financial crisis: 1) deterioration of financial sector balance sheets, 2) increases in interest rates, 3) increases in uncertainty, and 4) deterioration of nonfinancial balance sheets due to changes in asset prices.

3.1 Deterioration of Financial Sector Balance Sheets

The literature on asymmetric information and financial structure (see Gertler, 1988 and Bernanke, Gertler and Gilchrist, 1998 for excellent surveys), explains why financial intermediaries (commercial banks, thrift institutions, finance companies, insurance companies, mutual funds and pension funds), play such an important role in the financial system. They have both the ability and the economic incentive to address asymmetric information problems. For example, banks have an obvious ability to collect information at the time they consider making a loan, and this ability is only increased when banks engage in long-term customer relationships and line of credit arrangements. In addition, their ability to scrutinize the checking account balances of their borrowers provides banks with an additional advantage in monitoring the borrowers' behavior. Banks also have advantages in reducing moral hazard because, as demonstrated by Diamond (1984), they can engage in lower cost monitoring than individuals, and because, as pointed out by Stiglitz and Weiss (1983), they have advantages in preventing risk taking by borrowers since they can use the threat of cutting off lending in the future to improve a borrower's behavior. Banks' natural advantages in collecting information and reducing moral hazard explain why banks have such an important role in financial markets throughout the world. Indeed, the greater difficulty of acquiring information on private firms in emerging market countries explains why banks play a more important role in the financial systems in emerging market countries than they do in industrialized countries (Rojas-Suarez and Weisbrod, 1994).

Banks (and other financial intermediaries) have an incentive to collect and produce such information because they make private loans that are not traded, which reduces free rider

problems. In markets for other securities, like stocks, if some investors acquire information that screens out which stocks are undervalued and then they buy these securities, other investors who have not paid to discover this information may be able to buy right along with the well-informed investors. If enough free-riding investors can do this and the price is bid up, then investors who have collected information will earn less on the securities they purchase and will thus have less incentive to collect this information. Once investors recognize that other investors in securities can monitor and enforce restrictive covenants, they will also want to free ride on the other investors' monitoring and enforcement. As a result, not enough resources will be devoted to screening, monitoring and enforcement. But because the loans of banks are private, other investors cannot buy the loans directly, and free-riding on banks' restrictive covenants is much trickier than simply following the buying patterns of others. As a result, investors are less able to free ride off of financial institutions making private loans like banks, and since banks receive the benefits of screening and monitoring they have an incentive to carry it out.

The special importance of banks and other financial intermediaries in the financial system implies that if their ability to lend is impaired, overall lending will decline and the economy will contract. A deterioration in the balance sheets of financial intermediaries indeed hinders their ability to lend and is thus a key factor promoting financial crises.

If banks (and other financial intermediaries making loans) suffer a deterioration in their balance sheets, and so have a substantial contraction in their capital, they have two choices: either they can cut back on their lending; or they can try to raise new capital. However, when these institutions experience a deterioration in their balance sheets, it is very hard for them to raise new capital at a reasonable cost. Thus, the typical response of financial institutions with weakened balance sheets is a contraction in their lending, which slows economic activity. Recent research suggests that weak balance sheets led to a capital crunch which hindered growth in the U.S. economy during the early 1990s (e.g., see Bernanke and Lown, 1991, Berger and Udell, 1994, Hancock, Laing and Wilcox, 1995, and Peek and Rosengren, 1995, and the symposium published in Federal Reserve Bank of New York, 1993).

If the deterioration in bank balance sheets is severe enough, it can even lead to bank panics, in which there are multiple, simultaneous failures of banking institutions. Indeed, in the absence of a government safety net, there is some risk that contagion can spread from one bank failure to another, causing even healthy banks to fail. The source of the contagion is again asymmetric information. In a panic, depositors, fearing the safety of their deposits and not knowing the quality of the banks' loan portfolios, withdraw their deposits from the banking system, causing a contraction in loans and a multiple contraction in deposits, which then causes other banks to fail. In turn, the failure of a bank means the loss of the information relationships

in which that bank participated, and thus a direct loss in the amount of financial intermediation that can be done by the banking sector. The outcome is an even sharper decline in lending to facilitate productive investments, with an additional resulting contraction in economic activity.

3.2 Increases in Interest Rates

Asymmetric information and the resulting adverse selection problem can lead to "credit rationing," in which some borrowers are denied loans even when they are willing to pay a higher interest rate (Stiglitz and Weiss, 1981). This occurs because as interest rates rise, prudent borrowers are more likely to decide that it would be unwise to borrow, while borrowers with the riskiest investment projects are often those who are willing to pay the highest interest rates, since if the high-risk investment succeeds, they will be the main beneficiaries. In this setting, a higher interest rate leads to even greater adverse selection; that is, the higher interest rate increases the likelihood that the lender is lending to a bad credit risk. Thus, higher interest rates can be one factor that helps precipitate financial instability, because lenders recognize that higher interest rates mean a dilution in the quality of potential borrowers, and are likely to react by taking a step back from their business of financial intermediation and limiting the number of loans they make.

Increases in interest rates can also have a negative effect on bank balance sheets. The traditional banking business involves "borrowing short and lending long;" that is, taking deposits which can be withdrawn on demand (or certificates of deposit that can be withdrawn in a matter of months) and making loans that will be repaid over periods of years or sometimes even decades. In short, the assets of a bank typically have longer duration assets than its liabilities. Thus, a rise in interest rates directly causes a decline in net worth, because in present value terms, the interest-rate rise lowers the value of assets with their longer duration more than it raises the value of liabilities with their shorter duration.

3.3 Increases in Uncertainty

A dramatic increase in uncertainty in financial markets makes it harder for lenders to screen out good from bad credit risks. The lessened ability of lenders to solve adverse selection and moral hazard problems renders them less willing to lend, leading to a decline in lending, investment, and aggregate activity. This increase in uncertainty can stem from a failure of a prominent financial or nonfinancial institution, or from a recession, but of even more

importance in emerging market countries it can result from uncertainty about the future direction of government policies.

3.4 Deterioration of Nonfinancial Balance Sheets

The state of the balance sheet of nonfinancial firms is the most critical factor for the severity of asymmetric information problems in the financial system. If there is a widespread deterioration of balance sheets among borrowers, it worsens both adverse selection and moral hazard problems in financial markets, thus promoting financial instability. This problem can arise in a variety of ways.

For example, lenders often use collateral as an important way of addressing asymmetric information problems. Collateral reduces the consequences of adverse selection or moral hazard because it reduces the lender's losses in the case of a default. If a borrower defaults on a loan, the lender can sell the collateral to make up for at least some of the losses on the loan. But if asset prices in an economy fall, and the value of collateral falls as well, then the problems of asymmetric information suddenly rear their heads.

Net worth can perform a similar role to collateral. If a firm has high net worth, then even if it defaults on its debt payments, the lender can take title to the firm's net worth, sell it off, and use the proceeds to recoup some of the losses from the loan. High net worth also directly decreases the incentives for borrowers to commit moral hazard because borrowers now have more at stake, and thus more to lose, if they default on their loans. The importance of net worth explains why stock market crashes can cause financial instability. A sharp decline in the stock market reduces the market valuation of a firms' net worth, and thus can increase adverse selection and moral hazard problems in financial markets (Bernanke and Gertler, 1989; Calomiris and Hubbard, 1990). Since the stock market decline which reduces net worth increases incentives for borrowers to engage in moral hazard, and since lenders are now less protected against the consequences of adverse selection because the value of net assets is worth less, lending decreases and economic activity declines.

Increases in interest rates not only have a direct effect on increasing adverse selection problems, as described earlier, but they may also promote financial instability through both firms' and households' balance sheets. A rise in interest rates will increased households' and firms' interest payments, decrease cash flow and thus cause a deterioration in their balance sheets, as pointed out in Bernanke and Gertler's (1995) excellent survey of the credit view of monetary transmission. As a result, adverse selection and moral hazard problems become more

severe for potential lenders to these firms and households, leading to a decline in lending and economic activity. There is thus an additional reason why sharp increases in interest rates can be an important factor leading to financial instability.

Unexpected changes in the rate of inflation can also affect balance sheets of borrowers. In economies in which inflation has been moderate for a long period of time, debt contracts with long duration have interest payments fixed in nominal terms for a substantial period of time. When inflation turns out to be less than anticipated, which can occur either because of an unanticipated disinflation as occurred in the United States in the early 1980s or by an outright deflation as has occurred in Japan more recently, the value of firms' liabilities in real terms rises, and its net worth in real terms declines. The reduction in net worth then increases the adverse selection and moral hazard problems facing lenders, and reduces investment and economic activity.

In emerging market economies, a decline in unanticipated inflation does not have the unfavorable direct effect on firms' balance sheets that it has in industrialized countries. Debt contracts are of very short duration in many emerging market countries, and since the terms of debt contracts are continually repriced to reflect expectations of inflation, unexpected inflation has little real effect. Thus, one mechanism that has played a role in industrialized countries to promote financial instability has no role in many emerging market countries.

On the other hand, emerging market economies face at least one factor affecting balance sheets that can be extremely important in precipitating financial instability that is not important in most industrialized countries: unanticipated exchange rate depreciation or devaluation. Because of uncertainty about the future value of the domestic currency, many nonfinancial firms, banks and governments in emerging market countries find it much easier to issue debt if the debt is denominated in foreign currencies. With debt contracts denominated in foreign currency, when there is an unanticipated depreciation or devaluation of the domestic currency, the debt burden of domestic firms increases. Since assets are typically denominated in domestic currency and so do not increase in value, there is a resulting decline in net worth. This deterioration in balance sheets then increases adverse selection and moral hazard problems, which leads to financial instability and a sharp decline in investment and economic activity.

4.
Dynamics of Financial Crises

Financial crises in emerging markets undergo several stages. There is an initial stage during which a deterioration in financial and nonfinancial balance sheets occur, and which promotes the second stage, a currency crisis. The third stage is a further deterioration of financial and nonfinancial balance sheets that occurs as a result of the currency crisis, and this stage is the one that tips the economy over into a full-fledged financial crisis with its devastating consequences.

4.1 Initial Stage: Runup to the Currency Crisis

The first stage leading up to a financial crisis in emerging market countries has typically been a financial liberalization, which involved lifting restrictions on both interest-rate ceilings and the type of lending allowed and often privatization of the financial system. As a result, lending increased dramatically, fed by inflows of international capital.

Of course, the problem was not that lending expanded, but rather that it expanded so rapidly that excessive risk-taking was the result which led to an increase in nonperforming loans. For example, In Mexico and the East Asian crisis countries, the estimated percentage of loans that were nonperforming increased to over ten percent before the financial crisis struck (Mishkin, 1996a, Goldstein, 1998, and Corsetti, Pesenti and Roubini, 1998), and these estimates were probably grossly understated. This excessive risk-taking occurred for two reasons. First, banks and other financial institutions lacked the well-trained loan officers, risk-assessment systems, and other management expertise to evaluate and respond to risk appropriately. This problem was made even more severe by the rapid credit growth in a lending boom which stretched the resources of the bank supervisors who also failed to monitor these new loans appropriately. Second, emerging market countries such as Mexico, Ecuador, the East Asian crisis countries and Russia were notorious for weak financial regulation and supervision. (In contrast, the noncrisis countries in east Asia, Singapore, Hong Kong and Taiwan had very strong prudential supervision.) When financial liberalization yielded new opportunities to take on risk, these weak regulatory/supervisory systems could not limit the moral hazard created by the government safety net, and excessive risk-taking was one result. Even as government failed in supervising financial institutions, it was effectively offering an implicit safety net that these institutions would not be allowed to go broke, and thus reassuring depositors and foreign lenders that they did not need to monitor these institutions, since there were likely to be government bailouts to protect them.

It is important to note that banks were not the only source of excessive risk taking in

financial systems of crisis countries. In Thailand, finance companies, which were essentially unregulated, were at the forefront of real estate lending and they were the first to get into substantial difficulties before the 1997 crisis (Ito, 1998). In Korea, merchant banks, which were primarily owned by the chaebols and were again virtually unregulated, expanded their lending far more rapidly than the commercial banks and were extremely active in borrowing abroad in foreign currency (Hahm and Mishkin, 2000). Banks in these countries also expanded their lending and engaged in excessive risk taking as a result of financial liberalization and weak prudential supervision, but the fact that they received more scrutiny did put some restraints on their behavior.

A dangerous dynamic emerged. Once financial liberalization was adopted, foreign capital flew into banks and other financial intermediaries in these emerging market countries because they paid high yields in order to attract funds to rapidly increase their lending, and because such investments were viewed as likely to be protected by a government safety net, either from the government of the emerging market country or from international agencies such as the IMF. The capital inflow problem was further stimulated by government policies of keeping exchange rates pegged to the dollar, which probably gave foreign investors a sense of lower risk. In Mexico and East Asia capital inflows averaged was over 5 percent of GDP in the three years leading up to the crises. The private capital inflows led to increases in the banking sector, especially in the emerging market countries in the Asian-Pacific region (Folkerts-Landau et al., 1995). The capital inflows fueled a lending boom which led to excessive risk-taking on the part of banks, which in turn led to huge loan losses and a subsequent deterioration of banks' and other financial institutions' balance sheets.

The inflow of foreign capital, particularly short-term capital, was often actively encouraged by governments. For example, the Korean government allowed chaebols to convert finance companies they owned into merchant banks which were allowed to borrow freely abroad as long as the debt was short-term. A similar phenomenon occurred in Thailand which allowed finance companies to borrow from foreigners. The result was substantial increases in foreign indebtedness relative to the country's holding of international reserves: Mexico, Thailand, Korea and Indonesia all ended up with ratios of short-term foreign debt relative to reserves exceeding 1.5. The high degree of illiquidity in these countries suggests that they were vulnerable to a financial crisis (Radelet and Sachs, 1998).

This deterioration in financial sector balance sheets, by itself, might have been sufficient to drive these countries into a financial and economic crises. As explained earlier, a deterioration in the balance sheets of financial firms can lead them at a minimum to restrict their lending, or can even lead to a full-scale banking crisis which forces many banks into insolvency,

thereby nearly removing the ability of the banking sector to make loans. The resulting credit crunch can stagger an economy.

Another consequence of financial liberalization was a huge increase in leverage in the corporate sector. For example, in Korea debt relative to equity for the corporate sector as a whole shot up to three hundred and fifty percent before the crisis, while it was over four hundred percent for the chaebols. The increase in corporate leverage was also very dramatic in Indonesia where their corporations often borrowed directly abroad by issuing bonds, rather than borrowing from banks. This increase in corporate leverage increased the vulnerability to a financial crisis, because negative shocks would now be far more likely to tip corporations into financial distress.

Stock market declines and increases in uncertainty were additional factors precipitating the full-blown crises in Mexico, Thailand and South Korea. (The stock market declines in Malaysia, Indonesia and the Philippines occurred simultaneously with the onset of the crisis.) The Mexican economy was hit by political shocks in 1994 that created uncertainty, specifically the assassination of Luis Donaldo Colosio, the ruling party's presidential candidate, and an uprising in the southern state of Chiapas. By the middle of December 1994, stock prices on the Bolsa (stock exchange) had fallen nearly 20 percent from their September 1994 peak. In January 1997, a major Korean chaebol (conglomerate), Hanbo Steel, collapsed; it was the first bankruptcy of a chaebol in a decade. Shortly thereafter, Sammi Steel and Kia Motors also declared bankruptcy. In Thailand, Samprosong Land, a major real estate developer, defaulted on its foreign debt in early February 1997, and financial institutions that had lent heavily in the real estate market began to encounter serious difficulties, requiring over $8 billion of loans from the Thai central bank to prop them up. Finally, in June, the failure of a major Thai finance company, Finance One, imposed substantial losses on both domestic and foreign creditors. These events increased general uncertainty in the financial markets of Thailand and South Korea, and both experienced substantial declines in their securities markets. From peak values in early 1996, Korean stock prices fell by 25 percent and Thai stock prices fell by 50 percent.

As we have seen, an increase in uncertainty and a decrease in net worth as a result of a stock market decline increase asymmetric information problems. It became harder to screen out good from bad borrowers, and the decline in net worth decreased the value of firms' collateral and increased their incentives to make risky investments because there is less equity to lose if the investments are unsuccessful. The increase in uncertainty and stock market declines that occurred before the crisis, along with the deterioration in banks' balance sheets, worsened adverse selection and moral hazard problems and made the economies ripe for a serious financial crisis.

4.2 Second Stage: Currency Crisis

The deterioration of financial and nonfinancial sector balance sheets is a key factor leading to the second stage, a currency crisis. A weak banking system makes it less likely that the central bank will take the steps to defend a domestic currency because if it raises rates, bank balance sheets are likely to deteriorate further. In addition, raising rates sharply increases the cost of financing for highly leveraged corporations, which typically borrow short term, making them more likely to experience financial distress. Once investors recognize that a central bank is less likely to take the steps to successfully defend its currency, expected profits from selling the currency will rise and the incentives to attach the currency have risen. Also the recognition that the financial sector may collapse and require a bailout that would produce substantial fiscal deficits in the future also makes it more likely that the currency will depreciate (Burnside, Eichenbaum and Rebelo 1998).

The weakened state of the financial and nonfinancial balance sheets along with the high degree of illiquidity in Mexico and East Asian countries before the crisis, then set the stage for their currency crises. With these vulnerabilities, speculative attacks on the currency could have been triggered by a variety of factors. In the Mexican case, the attacks came in the wake of political instability in 1994 such as the assassination of political candidates and an uprising in Chiapas. Even though the Mexican central bank intervened in the foreign exchange market and raised interest rates sharply, it was unable to stem the attack and was forced to devalue the peso on December 20, 1994. In Thailand, the attacks followed unsuccessful attempts of the government to shore up the financial system, culminating in the failure of Finance One. Eventually, the inability of the central bank to defend the currency because the required measures would do too much harm to the weakened financial sector meant that the attacks could not be resisted. The outcome was therefore a collapse of the Thai baht in early July 1997. Subsequent speculative attacks on other Asian currencies led to devaluations and floats of the Philippine peso and Malaysian ringgit in mid-July, the Indonesian rupiah in mid-August and the Korean won in October. By early 1998, the currencies of Thailand, the Philippines, Malaysia and Korea had fallen by over 30 percent, with the Indonesian rupiah falling by over 75 percent.

4.3 Third Stage: Currency Crisis to Full-Fledged Financial Crisis

Once a full-blown speculative attack occurs and causes a currency depreciation, the institutional structure of debt markets in emerging market countries --the short duration of debt contracts and their denomination in foreign currencies -- now interacts with the currency devaluation to propel the economies into full-fledged financial crises. These features of debt contracts generate three mechanisms through which the currency crises increased asymmetric information problems in credit markets, thereby causing a financial crisis to occur.

The first mechanism involves the direct effect of currency devaluation on the balance sheets of firms. As discussed earlier, the devaluations in Mexico and East Asia increased the debt burden of domestic firms which were denominated in foreign currencies. This mechanism was particularly strong in Indonesia, the worst hit of all the crisis countries, which saw the value of its currency decline by over 75 percent, thus increasing the rupiah value of foreign-denominated debts by a factor of four. Even a healthy firm is likely to be driven into insolvency by such a shock if it had a significant amount of foreign-denominated debt.

A second mechanism linking the financial crisis and the currency crisis arises because the devaluation of the domestic currency led to further deterioration in the balance sheets of the financial sector, provoking a large-scale banking crisis. In Mexico and the east Asian countries, banks and many other financial institutions had many liabilities denominated in foreign currency which increased sharply in value when a depreciation occurs. On the other hand, the problems of firms and households meant that they were unable to pay off their debts, also resulting in loan losses on the assets side of financial institutions' balance sheets. The result was that banks' and other financial institutions' balance sheets were squeezed from both the assets and liabilities side. Moreover, many of these institutions' foreign-currency denominated debt was very short-term, so that the sharp increase in the value of this debt led to liquidity problems because this debt needed to be paid back quickly. The result of the further deterioration in banks' and other financial institutions' balance sheets and their weakened capital base is that they cut back lending. In the case of Indonesia, these forces were severe enough to cause a banking panic in which numerous banks were forced to go out of business.

The third mechanism linking currency crises with financial crises in emerging market countries is that the devaluation can lead to higher inflation. The central bank in an emerging market country may have little credibility as an inflation fighter. Thus, a sharp depreciation of the currency after a speculative attack that leads to immediate upward pressure on import prices, which can lead to a dramatic rise in both actual and expected inflation. This is exactly what

happened in Mexico and Indonesia, where inflation surged to over a 50 percent annual rate after the currency crisis. (Thailand, Malaysia and South Korea avoided a large rise in inflation, which partially explains their better performance relative to Indonesia.) The rise in expected inflation after the currency crises in Mexico and Indonesia led to a sharp rise in nominal interest rates which, given the short-duration of debt, led to huge increases in interest payments by firms. The outcome was a weakening of firms' cash flow position and further weakening their balance sheets, which then increased adverse selection and moral hazard problems in credit market.

All three of these mechanisms indicate that the currency crisis caused a sharp deterioration in both financial and non-financial firm balance sheets in the crisis countries, which then translated to a contraction in lending and a severe economic downturn. Financial markets were then no longer able to channel funds to those with productive investment opportunities, which led to devastating effects on the economies of these countries.

Note that the 1999 Brazilian crisis was not a financial crisis of the type described here. Brazil experienced a classic balance of payments crisis of the type described in Krugman (1979) in which concerns about unsustainable fiscal policy led to a currency crisis. The Brazilian banking system was actually quite healthy before the crisis because it had undergone substantial reform after a banking crisis in 1994 to 1996 (see Caprio and Klingbiel, 1999). Furthermore, Brazilian banks were adequately hedged against exchange rate risk before the devaluation in 1999 (Adams, et al, 1999). As a result, the devaluation did not trigger a financial crisis, although the high interest rates after the devaluation did lead to a recession. The fact that Brazil did not experience a financial crisis explains why Brazil fared so much better after its devaluation than did Mexico or the East Asian crisis countries.

Russia's financial crisis in 1998 also had a strong fiscal component, but was actually a symptom of widespread breakdown of structural reform and institution-building efforts (see International Monetary Fund, 1999). When the debt moratorium/restructuring and ruble devaluation was announced on August 17, Russian banks were subject to substantial losses on $27 billion face value of government securities and increased liabilities from their foreign debt. The collapse of the banking system and the negative effects on balance sheets on the nonfinancial sector from the collapse of the ruble then led to a financial crisis along the lines outlined above.

5.
Financial Policies to Prevent Financial Crises

Now that we have developed a framework for understanding why financial crises occur, we can look at what financial policies can help prevent these crises from occurring. We examine twelve basic areas of financial reform: 1) prudential supervision, 2) accounting and disclosure requirements, 3) legal and judicial systems, 4) market-based discipline, 5) entry of foreign banks, 6) capital controls, 7) Reduction of the role of state-owned financial institutions, 8) restrictions on foreign-denominated debt, 9) elimination of too-big-to-fail in the corporate sector, 10) sequencing financial liberalization, 11) monetary policy and price stability, 12) exchange rate regimes and foreign exchange reserves.

5.1 Prudential Supervision

As we have seen, banks play a particularly important role in the financial systems of emerging market counties and problems in the banking sector have been an important factor promoting financial crises in recent years. Deterioration in banks' balance sheets, which can lead to banking crises, increase asymmetric information problems which bring on financial crises. Furthermore, problems in the banking sector make a foreign exchange crisis more likely, which, by harming nonfinancial balance sheets, leads to a full blown financial crisis. Because banking panics have such potentially harmful effects, governments almost always provide an extensive safety net for the banking system to prevent banking panics. The downside of the safety net is that it increases moral hazard incentives for excessive risk-taking on the part of the banks which makes it more likely that financial crises will occur. To prevent financial crises, governments therefore need to pay particular attention to creating and sustaining a strong bank regulatory/supervisory system to reduce excessive risk-taking in their financial systems.

Because the government safety net in emerging market countries has invariably been extended to other financial intermediaries -- for example the Thai central bank provided liquidity assistance to insolvent finance companies -- these other financial institutions also have strong incentives to engage in excessive risk-taking. Indeed, deterioration in the balance sheets of these financial institutions played an important role in the financial crises in East Asia. Effective prudential supervision of these nonbank financial institutions is also critical to promote financial stability.

Encouraging a strong regulatory/supervisory system for the financial system takes seven basic forms.

5.1.1. Prompt Corrective Action. Quick action by prudential supervisors to stop undesirable activities by financial institutions and, even more importantly, to close down institutions that do not have sufficient capital is critical if financial crises are to be avoided. Regulatory forbearance which leaves insolvent institutions operating is disastrous because it dramatically increases moral hazard incentives to take on excessive risk because an operating but insolvent institution has almost nothing to lose by taking on colossal risks. If they get lucky and the risky investments pay off, they get out of insolvency. On the other hand, if, as is likely, the risky investments don't pay off, insolvent institutions' losses will mount, weakening the financial system further and leading to higher taxpayer bailouts in the future. Indeed, this is exactly what occurred in the savings and loan industry in the United States when insolvent S&Ls were allowed to operate during the 1980s and has been a feature of the situation in Mexico, East Asia and Japan in the 1990s.

An important way to ensure that bank supervisors do not engage in regulatory forbearance is through implementation of prompt corrective action provisions which require supervisors to intervene earlier and more vigorously when a financial institution gets into trouble. Prompt corrective action is crucial to preventing problems in the financial sector because it creates incentives for institutions not to take on too much risk in the first place, knowing that if they do so, they are more likely to be punished.

The outstanding example of prompt corrective action is the provision in the FDICIA (Federal Deposit Insurance Corporation Improvement Act) legislation implemented in the United States in 1991. Banks in the United States are classified into five groups based on bank capital. Group 1, classified as "well capitalized," are banks that significantly exceed minimum capital requirements and are allowed privileges such as insurance on brokered deposits and the ability to do some securities underwriting. Banks in group 2, classified as "adequately capitalized," meet minimum capital requirements and are not subject to corrective actions but are not allowed the privileges of the well-capitalized banks. Banks in group 3, "undercapitalized," fail to meet risk-based capital and leverage ratio requirements. Banks in groups 4 and 5 are "significantly undercapitalized" and "critically undercapitalized," respectively, and are not allowed to pay interest on their deposits at rates that are higher than average. Regulators still retain a fair amount of discretion in their actions to deal with

undercapitalized banks and can choose from a smorgasbord of actions, such as: restrictions on asset growth, requiring the election of a new board of directors, prohibiting acceptance of deposits from correspondent depository institutions, prohibiting capital distributions from any controlling bank holding company, and termination of activities that pose excessive risk or divestiture of non-bank subsidiaries that pose excessive risk.[1] On the other hand, FDICIA mandates that regulators must require undercapitalized banks to submit an acceptable capital restoration plan within 45 days and implement the plan. In addition, the regulatory agencies must take steps to close down critically undercapitalized banks (tangible equity capital less than 2% of assets) by putting them in receivership or conservatorship within ninety days, unless the appropriate agency and the FDIC concur that other action would better achieve the purpose of prompt corrective action. If the bank continues to be critically undercapitalized it must be placed in receivership, unless specific statutory requirements are met.

A key element of making prompt corrective action work is that bank supervisors have sufficient government funds to close down institutions when they become insolvent. It is very common that politicians and regulatory authorities engage in wishful thinking when their banking systems are in trouble, hoping that a large injection of public funds into the banking system will be unnecessary.[2] The result is regulatory forbearance with insolvent institutions allowed to keep operating which ends up producing disastrous consequences. The Japanese authorities have engaged in exactly this kind of behavior, but this was also a feature of the American response to the S&L crisis up until 1989.

Not only must weak institutions be closed down, but it must be done in the right way: Funds must not be supplied to weak or insolvent banking institutions to keep them afloat. To do so will just be throwing away good taxpayer money after bad. In the long-run, injecting public funds into weak banks does not deliver a restoration of the balance sheets of the banking system because these weak banks continue to be weak and have strong moral hazard incentives to take on big risks at the taxpayers' expense. This is the lesson learned from the U.S. experience in the 1980s as well as other countries more recently. The way to recapitalize the banking system is to close down all insolvent and weak institutions and sell off their assets to healthy institutions with public funds used to make the assets whole. If this is not possible, a

---

[1]See Sprong (1994) for an a more detailed discussion of the prompt corrective action provisions in FDICIA.

[2]In addition, banking institutions lobby often lobby vigorously to prevent the allocation of public funds to close down insolvent institutions because this allows them to stay in business and hopefully get out of the hole. This is exactly what happened in the United States in the 1980s as is described in Mishkin (1998a).

public corporation, like the Resolution Trust Corporation (RTC) in the United States or KAMCO in Korea, can be created which will have the responsibility to sell off the assets of these closed banks as promptly as possible, so that the assets can be quickly put to productive uses by the private sector.

To prevent financial crises, it is also imperative that stockholders, managers and large uninsured creditors be punished when financial institutions are closed and public funds are injected into the financial system. Protecting managers, stockholders and large uninsured creditors from the consequences of excessive risk-taking increases the moral hazard problem immensely and is thus highly dangerous although it is common.

5.1.2 Focus on Risk Management. The traditional approach to bank supervision has focused on the quality of the bank's balance sheet at a point in time and whether the bank complies with capital requirements. Although the traditional focus is important for reducing excessive risk-taking by banks, it may no longer be adequate. First is the point that capital may be extremely hard to measure. Furthermore, in today's world, financial innovation has produced new markets and instruments which make it easy for financial institutions and their employees to make huge bets quickly. In this new financial environment, an institution that is quite healthy at a particular point in time can be driven into insolvency extremely rapidly from trading losses, as has been forcefully demonstrated by the failure of Barings in 1995 which, although initially well capitalized, was brought down by a rogue trader in a matter of months. Thus an examination which focuses only on a bank's or other financial institutions balance-sheet position at a point in time may not be effective in indicating whether a bank will in fact be taking on excessive risk in the near future.

For example, bank examiners in the United States are now placing far greater emphasis on evaluating the soundness of bank's management processes with regard to controlling risk. This shift in thinking was reflected in a new focus on risk management in the Federal Reserve System's 1993 guidance to examiners on trading and derivatives activities. The focus was expanded and formalized in the Trading Activities Manual issued early in 1994, which provided bank examiners with tools to evaluate risk management systems. In late 1995, the Federal Reserve and the Comptroller of the Currency announced that they would be assessing risk management processes at the banks they supervise. Now bank examiners give a separate risk management rating from 1 to 5 which feeds into the overall management rating as part of the CAMEL system. Four elements of sound risk management are assessed to come up with the risk management rating: 1) The quality of oversight provided by the board of directors and

senior management, 2) the adequacy of policies and limits for all activities that present significant risks, 3) the quality of the risk measurement and monitoring systems, and 4) the adequacy of internal controls to prevent fraud or unauthorized activities on the part of employees. Bank examiners get to see what best practice for risk management is like in the banks they examine, and they can then make sure that best practice spreads throughout the banking industry by giving poor rankings to banks that are not up to speed.

Bank supervision in countries outside the United States would also help promote a safer and sounder financial sector by adopting similar measures to ensure that risk management procedures in their banks are equal to the best practice in financial institutions elsewhere in the world.

5.1.3 Limiting Too-Big-To-Fail. Because the failure of a very large financial institution makes it more likely that a major, systemic financial disruption will occur, supervisors are naturally reluctant to allow a big financial institution to fail and cause losses to depositors. The result is that most countries either explicitly or implicitly have a too-big-to-fail policy in which all depositors at a big bank, both insured and uninsured are fully protected if the bank fails. The problem with the too-big-to-fail policy is that it reduces market discipline on large financial institutions and thus increases their moral hazard incentives to take on excessive risk. This problem is even more severe in emerging market countries because their financial systems are typically smaller than industrialized countries and so tend to be dominated by fewer institutions. Furthermore, the connections with the government and political power of large financial institutions is often much greater in emerging market countries, thus making it more likely that they will be bailed out if they experience difficulties. Indeed, not only have uninsured depositors been protected in many emerging market countries when large institutions have been subject to failure, but other creditors and even equity holders have been also.

Limiting moral hazard from having financial institutions that are too-big or too-politically-connected to fail is a critical problem for prudential supervision in emerging market countries. Thus, in order to reduce increased incentives to take on excessive risk by large institutions, prudential supervisors need to scrutinize them even more rigorously than smaller ones and at a minimum, must impose losses on shareholders and managers when these institutions are insolvent. However, supervisors still have to face the quandary of not wanting to allow a failure of a large financial institution to destabilize the financial system, while keeping the moral hazard problem created by too-big-to-fail under control?

One proposal outlined in Mishkin (1999) is for the supervisory agencies to announce that

there is a strong presumption that when there is a bank failure, uninsured depositors would not be fully protected unless this is the cheapest way to resolve the failure. It is important to recognize that although large banking institutions may be too big to liquidate, they can be closed with losses imposed on uninsured creditors. Indeed this is exactly what FDICIA suggests should be done by specifying that, except under very unusual circumstances when the a bank failure poses "serious adverse effects on economic conditions or financial stability", a least-cost resolution procedure will be used to close down the bank. Ambiguity is created about the use of this systemic-risk exception to the least-cost-resolution rule because to invoke it requires a two-thirds majority of both the Board of Governors of the Federal Reserve System and the directors of the FDIC, as well as the approval of the secretary of the Treasury.

An important concern is that the systemic-risk exception to least-cost resolution will always be invoked when the failing bank is large enough because the government and central bank be afraid to impose costs on depositors and other creditors when a potential financial crisis is looming. Thus too-big-to-fail will still be alive, with all the negative consequences for moral-hazard risk-taking by the largest institutions. One way to cope with this problem is for the authorities to announce that although they are concerned about systemic risk possibilities, there will be a strong presumption that the first large bank to fail will not be treated as too-big-to-fail and costs will be imposed on uninsured depositors and creditors when the bank is closed. Rather than bail out the uninsured creditors at the initial large bank that fails, the authorities will stand ready to extend the safety net to the rest of the banking system if they perceive that there is a serious systemic risk problem.

The advantage of announcing such a stance is that uninsured depositors and creditors now have to worry that if this bank is the first one to fail, they will not be bailed out. As a result these depositors and creditors will now have an incentive to withdraw their funds if they worry about the soundness of the bank, even if it is very large, and this will alter the incentives of the bank away from taking on too much risk. Clearly, moral hazard still remains in the system because the authorities stand ready to extend the safety net to the rest of the system after the initial large institution fails if its failure creates the potential for a banking crisis. However, the extent of moral hazard is greatly reduced by the use of this form of constructive ambiguity. Furthermore, the cost of this remaining moral hazard must be balanced against the benefits of preventing a banking crisis if the initial bank failure is likely to snowball into a systemic crisis.

5.1.4 Adequate Resources and Statutory Authority for Prudential Regulators/Supervisors. In many emerging market countries, prudential supervisors are not given sufficient resources or

statutory authority (the ability to issue cease and desist orders and to close down insolvent banks) to do their jobs effectively. For example, in many emerging market countries, including even middle income countries such as Argentina and the Philippines, supervisors are subject to lawsuits for their actions and can be held personally liable. Their salaries are typically quite low and are a much smaller relative to private sector salaries than in industrialized countries. Without sufficient resources and incentives, not surprisingly supervisors will not monitor banks sufficiently in order to keep them from engaging in inappropriately risky activities, to have the appropriate management expertise and controls to manage risk, or to have sufficient capital so that moral hazard incentives to take on excessive risk are kept in check. Indeed, absence of sufficient monitoring of banking institutions sufficiently not surprisingly has occurred in many emerging market and transition countries (Mexico, Ecuador and East Asia being recent examples), but it has also been a very serious problem in industrialized countries. The resistance to providing the savings and loan supervisory agencies with adequate resources to hire sufficient bank examiners by the U.S. Congress was a key factor in making the S&L crisis in the United States in the 1980s much worse. The inadequacy of bank supervision in Japan and the problems it has caused are well-known, with the lack of resources for bank supervision exemplified by the fact that the number of bank examiners in Japan is on the order of 400 in contrast to around 7,000 in the United States.

Giving supervisors sufficient resources and statutory authority to do their jobs is thus critical to promoting a safe and sound financial system that is resistant to financial crises. Ruth Krivoy (2000), an ex-supervisor from Venezuela during its banking crisis, has put it very nicely by saying that supervisors in emerging market countries must be given "respect". If they are paid poorly, the likelihood that they can be bribed either directly or through promises of high paying jobs by the institutions they supervise will be very high. Making them personally liable for taking supervisory actions also makes it less likely that they will take the appropriate actions. Furthermore, if they do not have sufficient resources, particularly in information technology, to monitor financial institutions, then they will be unable to spot excessive risk taking.

5.1.5 Independence of Regulatory/Supervisory Agencies. Because prompt corrective action is so important, the bank regulatory/supervisory agency requires sufficient independence from the political process so that it is not encouraged to sweep problems under the rug and engage in regulatory forbearance. One way to ensure against regulatory forbearance is to give the bank supervisory role to a politically independent central bank. This has desirable elements as

pointed out in Mishkin (1991), but some central banks might not want to have the supervisory task thrust upon them because they worry that it might increase the likelihood that the central bank would be politicized, thereby impinging on the independence of the central bank. Alternatively, bank supervisory activities could be housed in a bank regulatory authority that is independent of the government.

Supervisory agencies will also not be sufficiently independent if they are starved for resources. If supervisory agencies have to come hat in hand to the government for resources or funds to close down insolvent institutions, they will be more subject to political pressure to engage in regulatory forbearance. Supervisors must have adequate financial resources at their finger tips to prevent this from occurring.

5.1.6 Accountability of Supervisors. An important impediment to successful supervision of the financial system is that the relationship between taxpayers on the one hand and the supervisors on the other creates a particular type of moral hazard problem, the principal-agent problem. The principal-agent problem occurs because the agent (the supervisor) does not have the same incentives as the principal (the taxpayer they ultimately work for) and so act in their own interest rather than in the interest of the principal.

To act in the taxpayer's interest, regulators have several tasks, as we have seen. They must set restrictions on holding assets that are too risky, impose sufficiently high capital requirements, and close down insolvent institutions. However, because of the principal-agent problem, supervisors have incentives to do the opposite and engage in regulatory forbearance. One important incentive for supervisors that explains this phenomenon is their desire to escape blame for poor performance by their agency. By loosening capital requirements and pursuing regulatory forbearance, supervisors can hide the problem of an insolvent bank and hope that the situation will improve, a behavior that Kane (1989) characterizes as "bureaucratic gambling". Another important incentive for supervisors is that they may want to protect their careers by acceding to pressures from the people who strongly influence their careers, the politicians.

Supervisors must be accountable if they engage in regulatory forbearance in order to improve incentives for them to do their job properly. For example, as pointed out in Mishkin (1997), an important but very often overlooked part of FDICIA which has helped make this legislation effective is that there is a mandatory report that the supervisory agencies must produce if the bank failure imposes costs on the Federal Deposit Insurance Corporation (FDIC). The resulting report is made available to any member of Congress and to the general public upon request, and the General Accounting Office must do an annual review of these reports.

Opening up the actions of bank supervisors to public scrutiny makes regulatory forbearance less attractive to them, thereby reducing the principal-agent problem. In addition, subjecting the actions of bank supervisors to public scrutiny reduces the incentives of politicians to lean on supervisors to relax their supervision of banks.

To get supervisors to do their jobs properly, they must also be subject to criminal prosecution if they are caught taking bribes and must also be subject to censure and penalties if they take jobs with institutions that they have supervised recently. This entails a change in culture for supervisors in many emerging market countries which allows them to get too close to the institutions they supervise.

5.1.7 Restrictions on Connected Lending. A particular problem in the financial sector, particularly in emerging market countries, is connected lending, lending to the financial institutions' owners or managers or their business associates. Financial institutions clearly have less incentives to monitor loans to their owners or managers, thus increasing the moral hazard incentives for the borrowers to take on excessive risk, thereby exposing the institution to potential loan losses. In addition, connected lending in which large loans are made to one party can result in a lack of diversification for the institution, thus increasing the risk exposure of the bank.

Prudential supervision to restrict connected lending are clearly necessary to reduce banks risk exposure. It can take several forms. One is disclosure of connected lending. Indeed, one prominent feature of New Zealand's disclosure requirements is that the amount of lending to connected persons is mandatory. Another are limits on the amount of connected lending as a share of bank capital. Indeed, although New Zealand has gotten rid of much of the traditional regulatory guidelines it still has chosen to have prudential limits on the amount of connected lending. Most countries have regulations limiting connected lending and many emerging market countries have stricter limits than in industrialized countries. However, a key problem in emerging market and transition countries is that connected lending limits are often not enforced effectively. Folkerts-Landau, et al. (1995) have pointed out that bank examiners in Asia were often unable to assess the exposure of banks to connected lending because of the use of dummy accounts or the lack of authority for the examiners to trace where the funds are used. Strong efforts to increase disclosure and increased authority for bank examiners to examine the books of the banks to root out connected lending is crucial if this source of moral hazard is to be kept under control.

Having commercial businesses owning large shares of financial institutions increases the incentives for connected lending. A prominent feature of the Korean financial crisis was that the chaebols were allowed large ownership stakes in merchant banks, which were virtually unsupervised. The merchant banks were then used as a conduit for greatly increasing the chaebols leverage by supplying them with large amounts of funds by borrowing abroad and then lending the proceeds to them. The excessive risk taking by the merchant banks eventually resulted in most of them becoming insolvent and was an important factor that led to the Korean financial crisis (Hahm and Mishkin, 2000). Preventing commercial enterprises from owning financial institutions is crucial for promoting financial stability in emerging market countries.

5.2 Accounting Standards and Disclosure Requirements

Accounting standards and disclosure requirements for financial institutions, which are often particularly lacking in emerging market and transition countries but also in a number of industrialized countries (Japan being the most prominent example). Without the appropriate information, both markets and supervisors will not be able to adequately monitor financial institutions to deter excessive risk-taking.[3] One prominent example is that accounting and supervisory conventions in many countries allow banks to make nonperforming loans look good by lending additional money to the troubled borrower who uses the proceeds to make the payments on the nonperforming loan, thus keeping it current, a practice known as "evergreening". The result is that nonperforming loans are significantly understated which makes it harder for the markets to discipline financial institutions or for supervisors to decide when banks are insolvent and need to be closed down. Many countries also do not require the reporting of key financial data by individual financial institutions, including their consolidated financial exposure, which makes it hard to sort out healthy from unhealthy institutions. Implementing proper accounting standards and disclosure requirements is an important first step in promoting a healthy financial system.[4]

---

[3]The importance of disclosure is illustrated in Garber and Lall (1996), which suggests that off-balance-sheet and off-shore derivatives contracts were used by Mexican banks before the Tequila crisis to get around regulations that were intended to prevent them from taking on foreign-exchange risk, and this played an important role in the Mexican crisis.

[4]See Goldstein and Turner (1996) and Goldstein (1997) for a further discussion of what steps need to be taken to beef up accounting standards and disclosure requirements.

An interesting example of an attempt to beef up disclosure requirements and raise their prominence in prudential supervision is the system put in place in New Zealand in 1996 (see Mortlock, 1996, and Nicholl, 1996). New Zealand scrapped its previous system of regular bank examinations and replaced it with one based on disclosure requirements that uses the market to police the behavior of the banks. Every bank in New Zealand must supply a comprehensive, quarterly financial statement that provides among other things, information on the quality of its assets, capital adequacy, lending activities, profitability, and its ratings from private credit-rating agencies and whether it has one. These financial statements must be audited twice a year, and not only must they be provided to the central bank, but they must also be made public, with a two-page summary posted in all bank branches. In addition, bank directors are required to validate these statements and state publicly that their bank's risk management systems are adequate and being properly implemented. A most unusual feature of this system is that bank directors face unlimited liability if they are found to have made false or misleading statements.

The New Zealand example illustrates that disclosure requirements can be strengthened appreciably. However, suggesting that relying solely on disclosure requirements to police the banking system is a workable model for other countries is going too far. Depositors are unlikely to have the sophistication to understand fully the information provided and thus may not impose the necessary discipline on the banks. Furthermore, unlimited liability for directors might discourage top people from taking these positions, thereby weakening the management of the banks. Although disclosure requirements might be sufficient in New Zealand because almost all New Zealand banks are foreign owned, so that bank supervision has been in effect outsourced to the supervisors of the foreign banks that own the New Zealand banks, it is unlikely to work in countries where most of the banking system is domestically owned.

5.3 Legal and Judicial Systems

The legal and judicial systems are very important for promoting the efficient functioning of the financial system and the inadequacies of legal systems in many countries are a serious problem for financial markets. If property rights are unclear or hard to enforce, the process of financial intermediation can be severely hampered. Collateral can be an effective mechanism to reduce adverse selection and moral hazard problems in credit markets because it reduces the lender's losses in the case of a default. However, in many developing countries, the legal system

prevents the use of certain assets as collateral or makes attaching collateral a costly and time-consuming process, thereby reducing the effectiveness of collateral to solve asymmetric information problems (Rojas-Suarez and Weisbrod, 1996). Similarly, bankruptcy procedures in developing countries are frequently very cumbersome (or even nonexistent), resulting in lengthy delays in resolving conflicting claims. Resolution of bankruptcies in which the books of insolvent firms are opened up and assets are redistributed can be viewed as a process to decrease asymmetric information in the marketplace. Furthermore, slow resolution of bankruptcies can delay recovery from a financial crisis because only when bankruptcies have been resolved is there enough information in the financial system to restore it to a healthy operation.

5.4 Encouraging Market-Based Discipline

There are two problems with relying on supervisors to control risk-taking by financial institutions. First, financial institutions have incentives to keep information away from bank examiners so that they are not restricted in their activities. Thus even if supervisors are conscientious, they may not be able to stop institutions from engaging in risky activities. Second, is that because of the principal-agent problem, supervisors may engage in regulatory forbearance and not do their jobs properly.

An answer to these problems is to have the market discipline financial institutions if they are taking on too much risk. We have already mentioned that disclosure requirements can help provide information to the markets which may help them monitor financial institutions and keep them from taking on too much risk. Two additional steps may help increase market discipline. One is to require that financial institutions have credit ratings. As part of the BASIC (which stands for bonds, auditing, supervision, information and credit ratings) supervisory system implemented in Argentina in December 1996 is the requirement that every bank have an annual rating provided by a rating agency registered with the central bank.[5] Institutions with more than $50 million in assets are required to have ratings from two rating agencies. As part of this scheme, the Argentinean central bank is responsible for performing an after the fact review of the credit ratings to check if the rating agencies are doing a reasonable job. As of January 1998, these credit ratings must be published on billboards in the banks and these ratings must also appear on all deposit certificates and all other publications related to obtaining funds from the

[5]See Banco Central de la Republica Argentina (1997) and Calomiris (1998) for a description of the Argentine BASIC system.

public. As part of New Zealand's disclosure requirements, all banks must prominently display their credit ratings on their long-term senior unsecured liabilities payable in New Zealand, or alternatively, indicate if they do not have a credit rating. Clearly, the lack of a credit rating or a poor credit rating is expected to cause depositors and other creditors to be reluctant to put their funds in the bank, thus giving the bank incentives to reduce its risk taking and boost its credit rating. This has a higher likelihood of working in Argentina and New Zealand because both countries do not have government deposit insurance.

Another way to impose market discipline on banks is to require that they issue subordinated debt (uninsured debt that is junior to insured deposits, but senior to equity). Subordinated debt, particularly if it has a ceiling on its the spread between its interest rate and that on government securities, can be an effective disciplining device. If the bank is exposed to too much risk, it is unlikely to be able to sell its subordinated debt. Thus, compliance with the subordinated debt requirement will be a direct way for the market to force banks to limit their risk exposure. Alternatively, deposit insurance premiums could be charged according to the interest rate on the subordinated debt. Not only would the issuance of subordinated debt directly help reduce incentives for banks to engage in risky activities, but it can also provide supplemental information to bank examiners that can help them in their supervisory activities. In addition, information about whether banks are successful in issuing subordinated debt and the interest rate on this debt can help the public evaluate whether supervisors are being sufficiently tough on a particular banking institution, thus reducing the scope of the principal-agent problem.

Argentina has implemented a subordinated debt requirement in its BASIC program, although without an interest rate cap, which took effect on January 1998. As reported in Calomiris (1998), initially about half of the banks have been able to comply with this requirement. Interestingly, as expected, it is the weakest banks that have had trouble issuing subordinated debt. Furthermore, banks that complied with the requirement had lower deposit rates and larger growth in deposits. Thus, the subordinated debt requirement looks like it has had the intended effect of promoting discipline on the banks (Calomiris and Powell, 2000).

5.5 Entry of Foreign Banks

Many countries have restrictions on the entry of foreign banks. Rather than seeing foreign banks as a threat, their entry should be seen as an opportunity to strengthen the banking system. In all but a few large countries, domestic banks are unable to diversify because their

lending is concentrated in the home country. In contrast, foreign banks have more diversified portfolios and also usually have access to sources of funds from all over the world through their parent company. This diversification means that these foreign banks are exposed to less risk and are less affected by negative shocks to the home country's economy. Because many emerging market and transition economies are more volatile than industrialized countries, having a large foreign component to the banking sector is especially valuable because it helps insulate the banking system from domestic shocks. Encouraging entry of foreign banks is thus likely to lead to a banking and financial system that is substantially less fragile and far less prone to crisis.

Another reason for encouraging entry of foreign banks is that this can encourage adoption of best practice in the banking industry. Foreign banks come with expertise in areas like risk management. As mentioned earlier, when bank examiners in a country see better practices in risk management, they can spread these practices throughout their country's banking system by downgrading banks who do not adopt these practices. Having foreign banks to demonstrate the latest risk management techniques can thus lead to improved control of risk in the home country's banking system. Clearly, there are also benefits from the increased competition that foreign bank entry brings to the banking industry in the home country. Entry of foreign banks will also lead to improved management techniques and a more efficient banking system.

Encouraging entry of foreign banks makes it also more likely that uninsured depositors and other creditors of banks will not be bailed out. Governments are far less likely to bail out the banking sector when it gets into trouble if many of the banks are foreign owned because it will be politically unpopular. Thus uninsured depositors and other creditors will have greater incentives to monitor the banks and pull out funds if these institutions take on too much risk. The resulting increase in market discipline is therefore more likely to encourage more prudent behavior by banking institutions.

5.6 Capital Controls

In the aftermath of the recent financial crises in Mexico and East Asia, in which the crisis countries experienced large capital inflows before the crisis and large capital outflows after the crisis, much attention has been focused on whether international capital movements are a major source of financial instability. The asymmetric information analysis of the crisis suggests that international capital movements can have an important role in producing financial instability,

but as we have seen this is because the presence of a government safety net with inadequate supervision of banking institutions encourages capital inflows which lead to a lending boom and excessive risk-taking on the part of banks.[6] Consistent with this view, Gavin and Hausman (1996) and Kaminsky and Reinhart (1999) do find that lending booms are a predictor of banking crises, yet it is by no means clear that capital inflows will produce a lending boom which causes a deterioration in bank balance sheets. Indeed, Kaminsky and Reinhart (1999) find that financial liberalization, rather than balance of payments developments inflows, appears to be a more important predictor of banking crises.

Capital outflows have also been pointed to as a source of foreign exchange crises, which as we have seen, can promote financial instability in emerging market countries. In this view, foreigners pull their capital out of country and the resulting capital outflow is what forces a country to devalue its currency. However, as pointed out earlier, a key factor leading to foreign exchange crises are problems in the financial sector which lead to the speculative attack and capital outflows. With this view, the capital outflow which is associated with the foreign exchange crisis is a symptom of underlying fundamental problems rather than a cause of the currency crisis. The consensus from many empirical studies [see the excellent survey in Kaminsky, Lizondo and Reinhart (1997)] provides support for this view because capital flow or current account measures do not have predictive power in forecasting foreign exchange crises, while a deeper fundamental such as problems in the banking sector helps predict currency crises.

The analysis here therefore does not provide a case for capital controls such as the exchange controls that have recently been adopted in Malaysia. Exchange controls are like throwing out the baby with the bath water. Capital controls have the undesirable feature that they may block funds from entering a country which will be used for productive investment opportunities. Although these controls may limit the fuel supplied to lending booms through capital flows, over time they produce substantial distortions and misallocation of resources as households and businesses try to get around them. Indeed, there are serious doubts as to whether capital controls can be effective in today's environment in which trade is open and where there are many financial instruments that make it easier to get around these controls.

On the other hand, there is a strong case to improve bank regulation and supervision so that capital inflows are less likely to produce a lending boom and excessive risk taking by banking institutions. For example, banks might be restricted in how fast their borrowing could grow and this might have the impact of substantially limiting capital inflows. These prudential

---

[6]See Calvo, Leiderman and Reinhart (1994) for a model of this process.

controls could be thought of as a form of capital controls, but they are quite different than the typical exchange controls. They focus on the sources of financial fragility, rather than the symptoms, and supervisory controls of this type can enhance the efficiency of the financial system rather than hampering it.

5.7 Reduction of the Role of State-Owned Financial Institutions

A feature of many countries' financial systems, particularly in emerging market and transition countries, is government interventions to direct credit either to themselves or to favored sectors or individuals in the economy. Governments either do this by setting interest rates at artificially low levels for certain types of loans, by creating development finance institutions to make specific types of loans, by setting up state-owned banks that can provide funds to favored entities, or by directing private institutions to lend to certain entities. Private institutions clearly have an incentive to solve adverse selection and moral hazard problems and lend to borrowers who have productive investment opportunities. Governments have less incentive to do so because they are not driven by the profit motive and so their directed credit programs or state-owned banks are less likely to channel funds to those borrowers who will help produce high growth of the economy. This type of government intervention in the credit markets is therefore likely to be result in less efficient investment and slower growth. Curtailing this government activity is therefore important for promoting economic growth (Caprio and Honohan, 2000).

The absence of a profit motive also means that state-owned banks are less likely to manage risk properly and be efficient. Thus it is not surprising that state-owned banks usually end up having larger loan loss ratios than private institutions, and countries with the highest share of state-owned banks, on average, are also the ones with a higher percentage of non-performing loans and higher operating costs (Goldstein and Turner, 1996, and Caprio and Honohan, 2000). Thus the presence of state-owned banks can substantially weaken the banking system. The inefficiency of state-owned banks and their higher loan losses strongly argue for privatization of the banking sector. However, even privatization must be managed properly or it can lead to disaster. If purchasers of banks are those who are likely to engage in excessive risk taking or even fraud, the possibility that banking problems will arise in the future are high. Also if purchasers of banks are allowed to put in very little of their own capital into the bank, they may also have strong incentives to engage in risky activities at the depositors and taxpayers

expense. These potential downsides of privatization do not indicate that privatization be avoided, but rather that the chartering or licensing process be sufficiently stringent to screen out bad owners, making sure that bank ownership goes to individuals who will improve bank performance over the previous government managers.

5.8 Restrictions on Foreign-Denominated Debt

The asymmetric information view of financial crises indicates that a debt structure with substantial foreign-denominated debt, as is typical in many emerging market countries, makes the financial system more fragile. Currency crises and devaluations do trigger full-fledged financial crises in countries with foreign-denominated debt, while this is not the case for countries whose debt is denominated in domestic currency.

The presence of foreign-denominated debt also makes if far more difficult for a country to recover from a financial crisis. Industrialized countries with debt denominated in domestic currency can promote recovery by pursuing expansionary monetary policy by injecting liquidity (reserves) into the financial system. Injecting reserves, either through open market operations or by lending to the banking sector, causes the money supply to increase, which in turns leads to a higher price level. Given that debt contracts are denominated in domestic currency and many debt contracts and are often of fairly long duration, the reflation of the economy causes the debt burden of households and firms to fall, thereby increasing their net worth. As outlined earlier, higher net worth then leads to reduced adverse selection and moral hazard problems in financial markets, undoing the increase in adverse selection and moral hazard problems induced by the financial crisis. In addition, injecting liquidity into the economy raises asset prices such as land and stock market values, which also cause an improvement in net worth and a reduction in adverse selection and moral hazard problems. Also, as discussed in Mishkin (1996b), expansionary monetary policy promotes economic recovery through other mechanisms involving the stock market and the foreign exchange market.

A second method for a central bank to promote recovery from a financial crisis is to pursue the so-called lender-of-last-resort role in which the central bank stands ready to lend freely during a financial crisis. By restoring liquidity to the financial sector, the lender of last resort can help shore up the balance sheets of financial firms, thereby preventing a systemic shock from spreading and bringing down the financial system. There are many instances of successful lender of last resort operations in industrialized countries (e.g., see Mishkin, 1991); the Federal Reserve's intervention on the day after the October 19, 1987 stock market crash is

one example. Indeed, what is striking about this episode is that the extremely quick intervention of the Fed resulted not only in a negligible impact on the economy of the stock market crash, but also meant that the amount of liquidity that the Fed needed to supply to the economy was not very large (see Mishkin (1991).

However, if the financial system has a large amount of foreign-denominated debt it may be far more difficult for the central bank to promote recovery from a financial crisis. With this debt structure, a central bank can no longer use expansionary monetary policy to promote recovery from a financial crisis. Suppose that the policy prescription for countries with little foreign-denominated debt, that is expansionary monetary policy and reflation of the economy, were followed in an emerging market country with a large amount of foreign-denominated debt. In this case the expansionary monetary policy is likely to cause the domestic currency to depreciate sharply. As we have seen before, the depreciation of the domestic currency leads to a deterioration in firms' and banks' balance sheets because much of their debt is denominated in foreign currency, thus raising the burden of indebtedness and lowering banks' and firms' net worth.

The net result of an expansionary monetary policy in an emerging market country with a large amount of foreign-denominated debt is that it hurts the balance sheets of households, firms, and banks. Thus, expansionary monetary policy has the opposite result to that found in industrialized countries after a financial crisis: it causes a deterioration in balance sheets and therefore amplifies adverse selection and moral hazard problems in financial markets caused by a financial crisis, rather than ameliorates them as in the industrialized country case.

For similar reasons, lender-of-last-resort activities by a central bank in a emerging markets country with substantial foreign-denominated debt, may not be as successful as in a industrialized country. Central bank lending to the financial system in the wake of a financial crisis which expands domestic credit might lead to a substantial depreciation of the domestic currency, with the result that balance sheets will deteriorate making recovery from the financial crisis less likely. The use of the lender-of-last-resort role by a central bank is therefore much trickier in countries with a large amount of foreign-denominated debt because central bank lending is now a two-edged sword.

The above arguments suggest that the economy would be far less prone to financial crises and could recover far more easily if the issuance of foreign-denominated debt was discouraged. Because much foreign-denominated debt is intermediated through the banking system, regulations to both restrict bank lending and borrowing in foreign currencies could greatly enhance financial stability. Similarly, restrictions on corporate borrowing in foreign currency or tax policies to discourage foreign-currency borrowing could help make the economy

better able to withstand a currency depreciation without undergoing a financial crisis. Krueger (2000) has also suggested that restrictions should be placed on financial institutions in industrialized countries to limit lending to emerging market countries using industrialized country currencies.

5.9 Elimination of Too-Big-To-Fail in the Corporate Sector

We have already discussed why a too-big-to-fail policy leads to increased risk taking by financial institutions. The same incentives clearly apply to corporations if they are considered to be too-big-to-fail (or too-politically-influential) by the government. Lenders, knowing that they are unlikely to be subjected to losses if the corporation gets into trouble, will not monitor the corporation and withdraw funds if it is taking on excessive risk. In many emerging market countries, governments have propped up large and politically-connected corporations when they suffer financial distress and this has been a source of increased risk taking by these companies, especially when they face difficult times. For example, as pointed out in Hahm and Mishkin (2000), the Korean government was perceived to have a too-big-to-fail policy for the chaebols whose profitability dropped in the 1990s. Given the resulting lack of market discipline, they proceeded to try to grow out of their problems by borrowing, frequently in foreign currency, and dramatically increasing their leverage. This increase in risk taking then was a key factor generating the financial crisis in Korea.

To contain incentives for the corporate sector to increase leverage and take on too much risk that leaves them extremely vulnerable to adverse shocks, it is imperative that too-big-to-fail policies be eliminated. This implies a greater separation between the corporate sector and the government, something that also requires a change in business culture in many emerging market countries.

5.10 Sequencing Financial Liberalization

Deregulation and liberalization of the financial system have swept through almost all countries in recent years. Although deregulation and liberalization are highly desirable objectives, the analysis of financial crises in this paper indicates that if this process is not managed properly, it can be disastrous. If the proper bank regulatory/supervisory structure,

accounting and disclosure requirements, restrictions on connected lending, and well-functioning legal and judicial systems are not in place when liberalization comes, the appropriate constraints on risk-taking behavior will be far too weak. The result will be that bad loans are likely, with potentially disastrous consequences for bank balance sheets at some point in the future.

In addition, before liberalization occurs, banks may not have the expertise to make loans wisely, and so opening them up to new lending opportunities may also lead to poor quality of the loan portfolio. We have also seen that financial deregulation and liberalization often lead to a lending boom, because of both increased opportunities for bank lending and financial deepening in which more funds flow into the banking system. Although financial deepening is a positive development for the economy in the long run, in the short run the lending boom may outstrip the available information resources in the financial system, helping to promote a financial collapse in the future.

The dangers in financial deregulation and liberalization do not imply that countries would be better off by not pursuing a liberalization strategy. To the contrary, financial liberalization is critical to the efficient functioning of financial markets so that they can channel funds to those with the most productive investment opportunities. Getting funds to those with the most productive investment opportunities is especially critical to emerging market countries because these investments can have especially high returns, thereby stimulating rapid economic growth. However, proper sequencing of financial deregulation and liberalization is critical to its success. It is important that policymakers put in place the proper institutional structure before liberalizing their financial systems, especially if there are no restrictions on financial institutions seeking funds abroad or issuing foreign-denominated debt. Before financial markets are fully liberalized, it is crucial that the precepts outlined above be implemented: provision of sufficient resources and statutory authority to bank supervisors, adoption of prompt corrective action provisions, an appropriate focus on risk management, independence of bank regulators/supervisors from short-run political pressure, increased accountability of bank supervisors, limitations on too-big-to-fail, adoption of adequate accounting standards and disclosure requirements, sufficient restrictions on connected lending, improvements in the legal and judicial systems, encouragement of market-based discipline, and encouragement of entry of foreign banks.

Because the above measures are not easy to install quickly and because of the stresses that rapid expansion of the financial sector puts on both managerial and supervisory resources, restricting the growth of credit when financial liberalization is put into place makes a lot of sense. This can take the form of putting upper limits on loan-to-value ratios, or for consumer credit, setting maximum repayment periods and minimum downpayment percentages. Banks

could also be restricted in how fast certain types of their loan portfolios are allowed to grow. In addition, at the beginning of the liberalization process, restrictions on foreign-denominated debt and prudential controls that might limit capital inflows may be necessary to reduce the vulnerability of the financial system. As the appropriate infrastructure is put into place, these restrictions then can be reduced. The bottom line is that, although eventually a full financial liberalization is a worthy goal, to avoid financial crises financial liberalization needs to proceed at a measured pace, with some restrictions imposed along the way.

5.11 Monetary Policy and Price Stability

Although, only indirectly a financial policy, it is also important to recognize that monetary policy can play an important role in promoting financial stability. Price stability is a worthy goal in its own right. Not only do public opinion surveys indicate that the public is very hostile to inflation, but there is also mounting evidence from econometric studies that inflation is harmful to the economy.[7]

The asymmetric information analysis of financial crises provides additional reasons why price stability is so important. As was mentioned earlier, when countries have a past history of high inflation, debt contracts are often denominated in foreign currencies. As we have seen, this feature of debt contracts makes the financial system more fragile because currency depreciation can trigger a financial crisis. Achieving price stability is a necessary condition for having a sound currency and with a sound currency, it is far easier for banks, nonfinancial firms and the government to raise capital with debt denominated in domestic currency. Thus another method for reducing an economy's dependence on foreign-denominated debt and enhancing financial stability is the successful pursuit of price stability.

Furthermore, central banks which have successfully pursued price stability have sufficient credibility so that expansionary monetary policy or a lender-of-last-resort operation in the face of a financial crisis is less likely to result in a rise in inflation expectations and a sharp depreciation of the currency which would harm balance sheets. Thus countries which have successfully pursued price stability have an enhanced ability to use monetary policy tools to promote recovery from a financial crisis.

---

[7]Inflation, particularly at high levels, is found to be negatively associated with growth. At lower levels, inflation is found to lower the level of economic activity, although not necessarily the growth rate. See the survey in Anderson and Gruen (1995) and Fischer (1993), one of the most cited papers in this literature.

5.12 Exchange Rate Regimes and Foreign Exchange Reserves

Although we have seen that the pursuit of price stability can enhance financial stability and is thus desirable, some methods of pursuing price stability can unfortunately promote financial instability. One commonly used method to achieve price stability is to peg the value of its currency to that of a large, low-inflation country. In some cases, this strategy involves pegging the exchange rate at a fixed value to that of the other country's currency so that its inflation rate will eventually gravitate to that of the other country. In other cases, a currency the strategy involves a crawling peg or target in which one country's currency is allowed to depreciate at a steady rate against that of another country so that its inflation rate can be higher than that of the country to which it is pegged.

Although adhering to a fixed or pegged exchange rate regime can be a successful strategy for controlling inflation, the analysis of financial crises in this paper illustrates how dangerous this strategy can be for an emerging market country with a large amount of foreign-denominated debt. Under a pegged exchange-rate regime, when a successful speculative attack occurs, the decline in the value of the domestic currency is usually much larger, more rapid and more unanticipated than when a depreciation occurs under a floating exchange-rate regime. For example, during the Mexican crisis of 1994-1995, the value of the peso fell by half in only a few months time, while in the recent Southeast Asian crisis, the worst-hit country Indonesia saw seen its currency decline to less than one-quarter of its pre-crisis value, also in a very short period of time. The damage to balance sheets after these devaluations was extremely severe. In Mexico, there was a several-fold increase in the net debtor position of business enterprises from before the devaluation in December 1994 till March 1995, while in Indonesia the over four-fold increase in the value of foreign debt arising from the currency collapse made it very difficult for Indonesian firms with appreciable foreign debt to remain solvent. The deterioration of nonfinancial firms' balance sheets leads to a deterioration in bank balance sheets because borrowers from the banks are now less likely to be able to pay off their loans. The result of this collapse in balance sheets were sharp economic contractions. In Mexico, real GDP growth in the second and third quarters of 1995 fell to rates around -10 percent, while Indonesia experience an even worse rate of decline, with GDP falling by close to fifteen percent in 1998, and an economy still in shambles.

Another potential danger from an exchange-rate peg is that by providing a more stable value of the currency, it might lower risk for foreign investors and thus encourage capital inflows. Although these capital inflows might be channeled into productive investments and

thus stimulate growth, they might promote excessive lending, manifested by a lending boom, because domestic financial intermediaries such as banks play a key role in intermediating these capital inflows [Calvo, Leiderman and Reinhart (1994)]. Indeed, Folkerts-Landau, et. al (1995) found that emerging market countries in the Asian-Pacific region with the large net private capital inflows also experienced large increases in their banking sectors. Furthermore, if the bank supervisory process is weak, as it often is in emerging market and transition countries, so that the government safety net for banking institutions creates incentives for them to take on risk, the likelihood that a capital inflow will produce a lending boom is that much greater. With inadequate bank supervision, the likely outcome of a lending boom is substantial loan losses and a deterioration of bank balance sheets and a possible financial crisis.[8]

A flexible exchange rate regime has the advantage that movements in the exchange rate are much less nonlinear than in a pegged exchange rate regime. Indeed, the daily fluctuations in the exchange rate in a flexible exchange rate regime have the advantage of making clear to private firms, banks, and governments that there is substantial risk involved in issuing liabilities denominated in foreign currencies. Furthermore, a depreciation of the exchange rate may provide an early warning signal to policymakers that their policies may have to be adjusted in order to limit the potential for a financial crisis.

The conclusion is that a pegged exchange rate regime may increase financial instability in emerging market countries. However, this conclusion does not indicate that fixing or pegging an exchange rate to control inflation is always inappropriate. Indeed, countries with a past history of poor inflation performance may find that only with a very strong commitment mechanism to an exchange rate peg (as in a currency board or full dollarization) can inflation be controlled (Mishkin, 1998b, and Mishkin and Savastano, 2000). However, the analysis does suggest that countries using this strategy to control inflation must actively pursue policies that will promote a healthy banking system. Furthermore, if a country has an institutional structure of a fragile banking system and substantial debt denominated in foreign currencies, using an exchange rate peg, particularly one with a weak commitment mechanism, to control inflation can be a very dangerous strategy indeed.[9] This is one reason why countries like Korea which

---

[8]Gavin and Hausman (1996) and Kaminsky and Reinhart (1999) do find that lending booms are a predictor of banking crises, yet it is less clear that capital inflows will produce a lending boom which causes a deterioration in bank balance sheets. Kaminsky and Reinhart (1996), for example, find that financial liberalization, rather than balance of payments developments inflows, appears to be a more important predictor of banking crises.

[9]See Obstfeld and Rogoff (1995) for additional arguments as to why pegged exchange rate regimes may be undesirable.

in the past year have de facto pegged their exchange rate by only allowing it to fluctuate within very narrow bounds may be leaving themselves more exposed to future financial crises than they realize.

Another feature of recent currency/financial crises is that countries with low amounts of international reserves relative to short-term foreign liabilities seemed to be more vulnerable to crises. This has led some researchers (e.g. Radelet and Sachs, 1998) to advocate increased holdings of international reserves to insulate countries from financial crises. Indeed, many emerging market countries have taken this recommendation to heart by accumulating large amount of reserves after their financial crises. For example, Korea currently has accumulated international reserves near the $100 billion level. Although accumulation of large amounts of international reserves may make emerging market countries less vulnerable to currency crises, they are unlikely to insulate them from a financial crisis if the financial sector is sufficiently weakened. Large accumulation of international reserves has the potential to lull an emerging market country into complacency about taking the steps to ensure a safe and sound financial system and thus could have a hidden danger.

6.
Concluding Remarks

The bad news is that in recent years, we have seen a growing number of banking and financial crises in emerging market countries, with great costs to their economies. The good news, however, is that we now have a much better understanding of why banking and financial crises occur in emerging market countries and so have a better idea of how these crises can be prevented. This paper has outlined a set of financial policies that can help in make financial crises less likely. If the political will to adopt these policies in emerging market countries grows, then we should see healthier financial systems in the these countries in the future, with substantial gains both from higher economic growth and smaller economic fluctuations.

References

Adams, Charles, Donald J. Mathieson and Gary Schinasi. 1999. International Capital Markets: Developments, Prospects and Key Policy Issues. (International Monetary Fund: Washington, D.C., September).

Anderson, P., and David Gruen. 1995. "Macroeconomic Policies and Growth," in Palle Anderson, Jacqui Dwyer and David Gruen, eds., Productivity and Growth (Reserve Bank of Australia: Sydney): 279-319.

Banco Central de la Republica Argentina. 1997. "Main Features of the Regulatory Framework of the Argentine Financial System," mimeo. (April).

Berger, Allen N., and Gregory Udell. 1994. "Do Risk-Based Capital Requirements Allocate Bank Credit and Cause a 'Credit Crunch' in the United States?" Journal of Money, Credit and Banking, 26, 585-628.

Bernanke, Ben S. and Mark Gertler. 1989. "Agency Costs, Collateral, and Business Fluctuations", American Economic Review, 79: 14-31.

Bernanke, Ben S. and Mark Gertler. 1995. "Inside the Black Box: The Credit Channel of Monetary Policy Transmission," Journal of Economic Perspectives, Fall, 9: 27-48.

Bernanke, Ben S., Gertler, Mark, and Simon Gilchrist. 1998. "The Financial Accelerator in a Quantitative Business Cycle Framework." NBER Working Paper 6455, March.

Bernanke, B.S. and C. Lown. 1991. "The Credit Crunch," Brookings Papers on Economic Activity, 2, pp. 205-39.

Burnside, Craig, Eichenbaum, Martin and Sergio Rebelo, "Prospective Deficits and the Asian Currency Crisis," Federal Reserve Bank of Chicago, Working Paper-98-5, September 1998.

Calomiris, Charles W. and R. Glenn Hubbard. 1990. "Firm Heterogeneity, Internal Finance, and `Credit Rationing'", Economic Journal, 100: 90-104.

Corsetti, Giorgio., Pesenti, Paolo and Noriel Roubini. 1998. "What Caused the Asian Currency and Financial Crisis? Part I and II," NBER Working Papers, No. 6833 and 6844.

Calomiris, Charles W. 1998. "Evaluation of Argentina's Banking Sector, 1991-1998," mimeo.

Calomiris, Charles W. and Andrew Powell, 2000, "Can Emerging Market Bank Regulators Establish Credible Discipline? The Case of Argentina, 1992-99, in Frederic S. Mishkin, ed., Prudentential Supervision: What Works and What Doesn't (University of Chicago Press: Chicago, forthoming).

Calvo, Guillermo A., Leiderman, Leonardo, and Carmen .M. Reinhart, 1994. "The Capital Inflows Problem: Concepts and Issues," Contemporary Economic Policy 12, July: 54-66.

Caprio, Gerald. and D. Klingbiel. 1999. "Episodes of Systemic and Borderline Financial Crises," mimeo. World Bank, October.

Caprio, Gerald and Patrick Honohan, 2000. Finance in a World of Volatility. World Bank, mimeo.

Diamond, Douglas. 1984. "Financial Intermediation and Delegated Monitoring", Review of Economic Studies, Vol. 51, pp. 393-414.

Federal Reserve Bank of New York. 1993. "The Role of the Credit Slowdown in the Recent Recession," Federal Reserve Bank of New York Quarterly Review, Spring, 18, #1.

Fischer, Stanley. 1993. "The Role of Macroeconomic Factors in Growth." Journal of Monetary Economics 32:485-512 .

Folkerts-Landau, David, Schinasi, Gary J., Cassard, M., Ng, V.K., Reinhart, C.M., and M.G. Spencer, 1995. "Effect of Capital Flows on the Domestic Financial Sectors in APEC Developing Countries," in M.S. Khan and C.M. Reinhart, eds. Capital Flows in the APEC Region (International Monetary Fund: Wash. D.C. 1995): 31-57

Garber, Peter M. and Subir Lall. 1996. "The Role and Operation of Derivative Markets in Foreign Exchange Market Crises," mimeo. February.

Gavin, Michael and Ricardo. Hausman, 1996. "The Roots of Banking Crises: the Macroeconomic Context," in Ricardo Hausman and Liliana Rojas-Suarez, eds., Banking Crises in Latin America (Interamerican Development Bank and Johns Hopkins University Press: Baltimore): 27-63.

Goldstein, Morris. 1997. The Case for an International Banking Standard (Institute for International Economics: Washington, D.C.)

Goldstein, Morris. 1998. The Asian Financial Crisis: Causes, Cures, and Systemic Implications (Institute for International Economics: Washington, D.C.)

Goldstein, Morris and Philip Turner. 1996. Banking Crises in Emerging Economies: Origins and Policy Options, BIS Economic Papers No. 46, October (Bank for International Settlements: Basle).

Hahm, Joon-Ho, and Frederic S. Mishkin. 2000. "The Korean Financial Crisis: An Asymmetric Information Perspective," Emerging Markets Review.

Hancock, D., Laing, A.J. and J.A. Wilcox. 1995. "Bank Capital Shocks: Dynamic Effects on Securities, Loans and Capital," Journal of Banking and Finance 19, 3-4: 661-77.

International Monetary Fund. 1998. World Economic Outlook and International Capital Markets: Interim Assessment. (International Monetary Fund: Washington, D.C., December.)

Ito, Takatoshi, 1998. "The Development of the Thailand Currency Crisi: A Chronological Review," Hitotsubahi University, mimeo, September 9.

Kaminsky, Graciela, Lizondo, S. and Reinhart Carmen M., 1997. Leading Indicators of Currency Crises. International Monetary Fund Working Paper WP/97/79.

Kaminsky, Graciela L. and Carmen M. Reinhart. 1999. "The Twin Crises: The Causes of Banking and Balance-of-Payments Problems," American Economic Review, 89, 3, 473-500.

Kane Edward J. 1989. The S&L Insurance Mess: How Did it Happen? Washington, D.C.: Urban Institute Press.

Krivoy, Ruth. 2000. "Challenges in Reforming National Bank Supervision", Federal Reserve Bank of Boston Annual Conference, forthcoming.

Krueger, Anne, 2000. "Conflicting Demands on the International Monetary Fund," American Economic Review, 90 (2): 38-42.

Krugman, Paul. 1979. "A Model of Balance of Payment Crises," Journal of Money, Credit and Banking, 11, 311-325.

Levine, Ross. 1997. "Financial Development and Economic Growth: Views and Agenda," Journal of Economic Literature (June), 35 (2): 688-726.

Mishkin, Frederic S. 1991. "Asymmetric Information and Financial Crises: A Historical Perspective", in Hubbard, R.G. (ed.) Financial Markets and Financial Crises. University of Chicago Press, Chicago., pp. 69-108.

Mishkin, Frederic S. 1996a. "Understanding Financial Crises: A Developing Country Perspective," Annual World Bank Conference on Development Economics, 29-62.

Mishkin, Frederic S. 1996b. "The Channels of Monetary Transmission: Lessons for Monetary Policy," Banque De France Bulletin Digest No. 27 (March 1996): 33-44

Mishkin, Frederic S. 1997. "Evaluating FDICIA," in George Kaufman, ed., FDICIA: Bank Reform Five Years Later and Five Years Ahead (JAI Press: Greenwich, Conn.):17-33.

Mishkin, Frederic S. 1998a. The Economics of Money, Banking and Financial Markets, 5th Edition (Addison Wesley Longman: Reading, Mass.).

Mishkin, Frederic S. 1998b. "The Dangers of Exchange Rate Pegging in Emerging-Market Countries" International Finance, Vol 1, # 1 (October): 81-101.

Mishkin, Frederic S. 1999. "Financial Consolidation: Dangers and Opportunities" Journal of Banking and Finance, February, vol. 23, Nos 2-4: 675-91.

Mishkin, Frederic S. and Miguel A. Savastano. 2000. "Monetary Policy Strategies for Latin America," National Bureau of Economic Research Working Paper No. 7617, March.

Mortlock, G. (1996). "A New Disclosure Regime for Registered Banks," Reserve Bank of New Zealand Bulletin, March.

Nicholl, P. (1996). "Market-Based Regulation," paper presented to IBRD Conference on Preventing Banking Crises, April.

Obstfeld, Maurice and Kenneth. Rogoff. 1995. "The Mirage of Fixed Exchange Rates," Journal of Economic Perspectives Fall, 9, #4, pp. 73-96.

Peek, J. and E.S. Rosengren. 1995. "Bank Regulation and the Credit Crunch," Journal of Banking and Finance 19, 2-4, pp. 679:92.

Radelet, Steven and Jeffrey Sachs, 1998. "The Onset of the East Asian Crisis." NBER Working Paper No. 6680, August, Cambridge, MA: NBER.

Rojas-Suarez, Liliana and Steven R. Weisbrod. 1994. "Financial Market Fragilities in Latin America: From Banking Crisis Resolution to Current Policy Challenges," IMF Working Paper WP/94/117, October.

Rojas-Suarez, Liliana and Steven Weisbrod. 1996. "Building Stability in Latin American Financial Markets," in Ricardo Hausman and Helmut Reisen, eds., Securing Stability and Growth in Latin America (Paris: OECD Development Center and Inter-American Development Bank).

Sprong, Kenneth, 1994. Banking Regulation (Federal Reserve Bank of Kansas City: Kansas City, Mo.)

Stiglitz, J.E., and Weiss, A. 1981. "Credit Rationing in Markets with Imperfect Information", American Economic Review, Vol. 71, pp. 393-410.

Stiglitz, Joseph E., and Andrew Weiss. 1983. "Incentive Effects of Terminations: Applications to Credit and Labor markets," American Economic Review, Vol. 73, pp. 912-27.

Policy Research Working Paper Series

	Title	Author	Date	Contact for paper
WPS2667	Trade Reform and Household Welfare: The Case of Mexico	Elena Ianchovichina Alessandro Nicita Isidro Soloaga	August 2001	L. Tabada 36896
WPS2668	Comparative Life Expectancy in Africa	F. Desmond McCarthy Holger Wolf	August 2001	H. Sladovich 37698
WPS2669	The Impact of NAFTA and Options for Tax Reform in Mexico	Jorge Martinez-Vazquez Duanjie Chen	September 2001	S. Everhart 30128
WPS2670	Stock Markets, Banks, and Growth: Correlation or Causality?	Thorsten Beck Ross Levine	September 2001	A. Yaptenco 31823
WPS2671	Who Participates? The Supply of Volunteer Labor and the Distribution of Government Programs in Rural Peru	Norbert R. Schady	September 2001	T. Gomez 32127
WPS2672	Do Workfare Participants Recover Quickly from Retrenchment?	Martin Ravallion Emanuela Galasso Teodoro Lazo Ernesto Philipp	September 2001	C. Cunanan 32301
WPS2673	Pollution Havens and Foreign Direct Investment: Dirty Secret or Popular Myth?	Beata K. Smarzynska Shang-Jin Wei	September 2001	L. Tabada 36896
WPS2674	Measuring Economic Downside Risk and Severity: Growth at Risk	Yan Wang Yudong Yao	September 2001	A. Rivas 36270
WPS2675	Road Infrastructure Concession Practice in Europe	Franck Bousquet Alain Fayard	September 2001	G. Chenet-Smith 36370
WPS2676	An Alternative Unifying Measure of Welfare Gains from Risk-Sharing	Philippe Auffret	September 2001	K. Tomlinson 39763
WPS2677	Can Local Institutions Reduce Poverty? Rural Decentralization in Burkina Faso	Paula Donnelly-Roark Karim Ouedraogo Xiao Ye	September 2001	E. Hornsby 33375
WPS2678	Emerging Markets Instability: Do Sovereign Ratings Affect Country Risk and Stock Returns?	Graciela Kaminsky Sergio Schmukler	September 2001	E. Khine 37471
WPS2679	"Deposit Insurance Around the Globe: Where Does It Work?	Aslı Demirgüç-Kunt Edward J. Kane	September 2001	K. Labrie 31001
WPS2680	International Cartel Enforcement: Lessons from the 1990s	Simon J. Evenett Margaret C. Levenstein Valerie Y. Suslow	September 2001	L. Tabada 36896

Policy Research Working Paper Series

	Title	Author	Date	Contact for paper
WPS2681	On the Duration of Civil War	Paul Collier Anke Hoeffler Måns Söderbom	September 2001	P. Collier 88208
WPS2682	Deposit Insurance and Financial Development	Robert Cull Lemma W. Senbet Marco Sorge	September 2001	K. Labrie 31001